REMARKS

The present application is a division of copending parent Application No. 09/438,974 filed on November 12, 1999. Claims 31-53 are presented for examination, of which Claims 31, 36, 39, 42, 47, 50, and 53-55 are in independent form. Claims 1-30 have been cancelled, without prejudice or disclaimer of subject matter presented.

In addition, a substitute specification (both clean and marked copies) is submitted herewith, making the changes made to the parent application, and supplying the required cross-reference to the parent application. A Letter Submitting Corrected Drawings also is submitted herewith, making the same changes to the drawings that were made in the parent application. No new matter is added by any of the changes made in this Amendment.

Favorable consideration and early passage to issue of the present divisional application are respectfully requested.

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. § 1.56, Applicants respectfully direct the Examiner's attention to the documents listed on the enclosed PTO-1449 form.

The information listed on the enclosed PTO-1449 form was cited in the parent of the present divisional application, Application No. 09/438,974, and might be deemed pertinent for the reasons given there. The Examiner is respectfully directed to the files of the U.S. Patent and Trademark Office for review of those documents. (See 37 C.F.R. § 1.98(d) and MPEP § 609.) Additionally, the Examiner is requested to indicate

that the listed information has been considered by initialing the appropriate portions of the enclosed PTO-1449 form and returning a copy of same to Applicants' attorneys of record.

CONCLUSION

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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INFORMATION PROCESSING METHOD, INFORMATION PROCESSING APPARATUS, INFORMATION PROCESSING SYSTEM, MULTIMEDIA PRESENTATION SYSTEM, FILE UPDATE METHOD, MULTIMEDIA PRESENTATION METHOD, AND STORAGE MEDIUM

CROSS-REFERENCE TO RELATED APPLICATION

The present application is a divisional of Application No. 09/438,974, filed November 12, 1999, the entire disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to an information processing apparatus and a file update method ~~which update~~ that updates files in a storage means in which, e.g., material files and a scenario file ~~to control~~ that controls the material files have been stored; an information processing system and an information processing method ~~which transfer~~ that transfers, e.g., material files and a scenario file through a network, or the like, and then ~~reproduce~~ reproduces the files at a transfer destination; a presentation system and a presentation method ~~which perform~~ that performs a presentation ~~by using various materials,~~ e.g., material files and a scenario file; and a storage medium ~~which~~ that is used to realize each of the above-described methods.

Related Background Art

[0002] Recently, a multimedia presentation system ~~which~~ that reproduces multimedia material files such as a still image, a motion image (or animation), a voice, a character, and the like, according to a sequence described in a scenario file ~~for controlling~~ that controls the multimedia material files in a time series, has ~~been paid to~~ received attention.

[0003] As shown in Fig. 7, the multimedia presentation system includes a PC (personal computer) 111, a multimedia server 113, which is connected to the PC 111 through a

network 112, and a monitor 114 and speakers 115, which are connected to the multimedia server 113.

[0004] Next, ~~generation~~ a general use of this system will be explained.

[0005] Multimedia materials, such as an image, a voice, a character, and the like, to be ~~subjected to~~ used in a multimedia presentation are collected and filed by the PC 111. The filed multimedia materials, or material files, are edited by a dedicated authoring tool for the multimedia presentation system. ~~Concretely~~ More specifically, icons representing the voice, the still image, the motion image, and the character are dragged and dropped (i.e., in a drag-and-drop operation), and pasted according to a time base. Then a scenario file, which is written ~~with~~ to describe a sequence ~~to display~~ for displaying the material files, is formed on the basis of information obtained ~~by~~ from the pasting.

[0006] ~~After then~~ Afterwards, the formed scenario file and the material files, which together constitute a multimedia program, are transferred to the multimedia server 113 through the network 112. The transferred multimedia program is recorded into an HDD (hard disk drive) 120 of the server 113, and then reproduced in response to an instruction from a not-shown terminal to be provided to a viewer (or audience).

[0007] The above-described multimedia presentation system, which performs ~~the~~ a presentation by using the multimedia materials, also performs a file update process according to a following procedure. Fig. 8 is a notional view showing a conventional file update ~~processing~~ process.

(1) The PC 111 transfers a new multimedia program, such as a program 131 shown in Fig. 8, to the HDD 120 of the multimedia server 113.

(2) If a directory named "PRESEN" of which name is identical ~~with~~ to that of ~~the transfer origin~~ being transferred does not exist in the HDD 120 of the server 113 ~~in~~ at the transfer destination, ~~the~~ a directory named "PRESEN" is formed at the transfer destination.

(3) A scenario file named "a.SEN" and multimedia material files named "ab.jpg", "a.txt", and "a.snd", which are linked to and controlled or used by this scenario

and used file, are recorded into the directory ~~which exists in the HDD 120 of the transfer destination and is identical with that of the transfer origin~~ named "PRESEN" in the HDD 120 of the transfer destination. At this time, the contents of the HDD 120 of the multimedia server 113 are as shown in the program 131 of Fig. 8.

(4)   Next, for example, it is assumed that an English version of a presentation scenario ~~in English version~~ is necessary. In this case, a multimedia program 132 of Fig. 8 in which only a narration of the previously transferred multimedia program 131 of Fig. 8 has been changed is additionally transferred to the HDD 120.

(5)   ~~Since~~ Because the directory named "PRESEN" now exists ~~in~~ at the transfer destination, it is unnecessary to form such ~~the~~ a directory.

(6)   ~~Since~~ Because a scenario file named "b.SEN" does not exist, ~~the~~ a scenario file "b.SEN" is recorded in the directory named "PRESEN" of the HDD 120.

(7)   ~~Since~~ Because the image material file "ab.jpg" ~~now~~ already exists, this file is recorded only in a case where a time stamp of the file at the PC 111 side has been updated.

(8)   ~~Since~~ Because a voice material file named "b.snd" and a character material file named "b.txt" have been Anglicized and do not exist in the HDD 120, these files are recorded into the HDD 120. Thus, the directory named "PRESEN" in the HDD 120 of the multimedia server 113 ~~is given as~~ corresponding to a multimedia program 133, such as shown in Fig. 8, results.

(9)   Next, it is assumed that the presentation in English becomes unnecessary, and the scenario file named "b.SEN" is deleted. However, ~~since~~ because there is a possibility that ~~other~~ the material files ~~are~~ may be referred to or used by another scenario file, ~~it can do nothing but leaves them just~~ the material files are left as ~~it~~ is. Thus, the directory named "PRESEN" in the HDD 120 of the multimedia server 113 ~~is given as~~ corresponding to a multimedia program 134, as shown in Fig. 8, results. It can be understood that ~~the~~ unnecessary files (i.e., "b.snd" and "b.txt") of which file names start with "b" remain in the directory "PRESEN".

[0008] In the above-described related background art, there are the following problems.

[0009] As explained in the above-described procedure (9), in ~~the~~ a case ~~where the~~ in which plural scenario files exist in the ~~identical~~ the same directory, it is sometimes necessary to delete ~~either~~ one of the scenario files. In ~~this~~ the above case, for example, when the scenario file named "b.SEN" ~~in~~ for the English version is unnecessary, if the material files used ~~in~~ by this scenario file are all deleted, the material file named "ab.jpg", which is also used ~~in~~ by the scenario file named "a.SEN" ~~in~~ for the Japanese version, is deleted. Thus, ~~the inconvenience that~~ a situation is caused in which the scenario file ~~in~~ for the Japanese version does not operate ~~is caused~~ properly.

[0010] In order to eliminate such ~~the~~ inconvenience, as shown in the multimedia program 134 of Fig. 8, it is possible to delete only the scenario file named "b.SEN" but not ~~to~~ delete any material files. In this case, ~~the problem that,~~ as described above, ~~since~~ there is the problem that unnecessary material files are accumulated in the HDD 120 of the multimedia server 133, ~~and~~ a disk capacity is uselessly consumed.

[0011] Further, there has been proposed a method ~~using such~~ that uses a link count, such as used in a UNIX filing system ~~can be thought~~. In this method, how many ~~scenarios the~~ scenario files a material file ~~itself~~ is referred to or used by is maintained or held or stored, a countdown is performed every time ~~the scenario~~ a scenario file is deleted, and the material file itself is deleted when the count reaches "0". However, ~~since~~ because it is impossible to maintain or hold such a value for ~~the~~ a material file such as ~~the~~ an ordinary image, a voice, or the like, this method is inapplicable.

[0012] In order to eliminate these problems conventionally, ~~no the~~ a directory of ~~the~~ a hard disk is periodically deleted together with the scenario file and the material files.

SUMMARY OF THE INVENTION

[0013] An object of the present invention is to solve all or at least one of the above-described ~~conventional~~ problems.

[0014] Another object of the present invention is to provide an information processing apparatus, an information processing system, a presentation system, a file update system, an information processing method, a presentation method, and a storage medium, which can easily and surely prevent ~~that~~ unnecessary files ~~are accumulated~~ from accumulating in storage means.

[0015] ~~Under such the object, according to the~~ According to a preferred embodiment of the present invention, ~~it is disclosed~~ an information processing method, in which ~~transfers and records material files and scenario files for controlling the material files into storage means and reproduces data of the material files on the basis of the scenario file in the storage means comprising:~~ material files and scenario files that control the material files are recorded in a storage means and in which a set of material files is reproduced according to a corresponding scenario file, includes first and second processing steps and a determination step. In the first processing step, an instruction is given to make a predetermined scenario file in the storage means nonreadable. Then a determination is made of unnecessary material files from among the material files in the storage means, the unnecessary material files being material files that are not controlled by any scenario file other than the predetermined scenario file that has been instructed in the first processing step to be made nonreadable. In the second processing step, the unnecessary material files, controlled by the predetermined scenario file, are made nonreadable.

~~a first step of processing the predetermined scenario file in the storage means to be nonreadable; and~~

~~a second step of processing the unnecessary material files in the storage means such that these files can not be automatically read.~~

[0016] Still another object of the present invention is to delete unnecessary sub files (or material files) from ~~those~~ sub-files (or material files) related to a scenario file, wherein the unnecessary sub-files ~~being~~ are not related to another scenario file.

[0017] ~~Under such the object, according to the preferred embodiment of the present invention, it is disclosed the above-described information processing method, wherein the~~

unnecessary material files are the material files which remain after the material files used in the remaining scenario file are excluded from the material files used in the scenario file processed to be nonreadable.

[0018] Further, it is preferably disclosed the above-described information processing method, wherein in the scenario file a sequence for controlling each of the material files in a time series is described.

[0019] Further, it is preferably disclosed the above-described information processing method, wherein the material file is composed of data including image data, voice data, or character data.

[0020] Still another object of the present invention is to delete sub files (or material files) not used in a main file, from those stored in a storage medium.

[0021] Under such the object, according to the preferred embodiment of the present invention, it is disclosed an information processing method, comprising:

a deletion designation step of designating, in a storage medium which stores a main file executed by an application program and a sub file related to the main file and used when the main file is executed, the file to be deleted, so as to control various file operations; and

a deletion step of deleting the file designated in the deletion designation step,

wherein the deletion step includes a control step of performing, when the main file designated in the deletion designation step is deleted, controlling to delete the sub file used by the main file and not used by another main file remaining in the storage medium.

[0022] Further, it is preferably disclosed the above-described information processing method, wherein the sub file does not include therein link information to other files, and the main file includes link information of the sub file used when the main file is executed.

[0023] Further, it is preferably disclosed the above-described information processing method, wherein the deletion step includes a list formation step of forming a list concerning the sub file used by the main file designated to be deleted and not used by

~~another main file remaining in the storage medium, in accordance with the deletion~~

~~designation stored in the deletion designation step.~~

[0024] Still another object of the present invention is to prevent, ~~by~~ <u>when</u> deleting a scenario file executed by a presentation program, ~~that unnecessary~~ material files for a scenario file other than the scenario file to be deleted ~~remain~~ <u>from being deleted</u>.

[0025] ~~Under such the object, according to the preferred embodiment of the present invention, it is disclosed the above-described information processing method, wherein the application program is a presentation program, the main file is a scenario file to be executed by the presentation program, and the sub-file is a material file related to the scenario file in a time series.~~

[0026] Other objects and features of the present invention<u>, and in particular, other methods, apparatus, and memory media within the scope of the invention, and directed to aspects other than that summarized above,</u> will become apparent from the following detailed description and the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] Fig. 1 ~~is a conceptional~~ <u>schematically shows a</u> structural view of a multimedia presentation system according to ~~the~~ <u>an</u> embodiment of the present invention;

[0028] Fig. 2 is a block diagram showing a detailed structure of a multimedia server 13 shown in Fig. 1;

[0029] Fig. 3 is a view showing an example of a scenario file;

[0030] Fig. 4 is a flow chart showing a file update procedure ~~in the~~ <u>according to an</u> embodiment <u>of the present invention</u>;

[0031] Fig. 5 is a flow chart showing ~~the~~ <u>a</u> file update procedure ~~in the~~ <u>according to an</u> embodiment <u>of the present invention</u>;

[0032] Fig. 6 ~~is a conceptional view showing~~ <u>conceptually shows a</u> file update processing ~~in the~~ <u>procedure according to an</u> embodiment <u>of the present invention</u>;

[0033] Fig. 7 is a block diagram showing a schematic structure of a conventional multimedia presentation system; and

[0034] Fig. 8 is a conceptional view showing conceptually shows a conventional file update processing procedure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0035] Fig. 1 is a block diagram showing a schematic structure of a multimedia presentation system according to the an embodiment of the present invention.

[0036] In Fig. 1, numeral 11 denotes a PC (personal computer) used for multimedia program authoring. The PC 11 captures multimedia materials, such as an image, a voice, a character, and the like, which together constitute the a multimedia program, and files them. Further, the PC 11 has a function to edit these filed materials, or material files, as a program by using, e.g., an authoring tool. By this editing function, a scenario file which relates to and describes a reproduction time to for each of the image, voice, and character files is formed.

[0037] The PC 11 is connected to a multimedia server 13 through a network 12, such as an Ethernet, or the like. In this connection, the PC 11 has a function to transfer multimedia program data, which is composed of the above-described multimedia material files and the scenario file, to the side of the multimedia server 13.

[0038] The multimedia server 13 includes an HDD (hard disk drive) 13a, which accumulates or stores the program data transferred through the network 12. Also, the multimedia server 13 includes a file update means 13b and a file update control means 13c, which are features the present invention. The file update means 13b updates the contents of the files in the HDD 13a. When the file update means 13b deletes the a predetermined scenario file in the HDD 13a, the file update control means 13c controls the file update means 13b to automatically delete also unnecessary material files (later which will be explained in detail below with reference to Fig. 5). It should be noted that the file update means 13b and the file update control means 13c can be structured not

only as software but also as hardware. Also, the multimedia server 13 has a function to interpret the scenario file, and output image data and voice data ~~respectively~~ to a monitor 14 and speakers 15, respectively.

[0039] Fig. 2 is a block diagram showing a detailed structure of the multimedia server 13 shown in Fig. 1.

[0040] As shown in Fig. 2, the multimedia server 13 includes a CPU (central processing unit) 21, which controls ~~a~~ an entire presentation operation ~~entirely~~. The CPU 21 is connected with the HDD 13a through an HDD I/F (hard disk interface) 22. The multimedia program data transferred through the network 12 is recorded or stored ~~into~~ in the HDD 13a through a network I/F (interface) 31.

[0041] ~~After then~~ Afterwards, when the recorded data is reproduced, the CPU 21 interprets the scenario file read from the HDD 13a, and transfers the material files (i.e., image, character, and voice data files) stored in the HDD 13a ~~respectively~~ to an image decoder 32, a character generation engine 33, and a voice decoder 34, respectively, on the basis of the interpreted result. Thereafter, an analog monitor output is ~~output~~ outputted to the monitor 14 through frame memories 35 and 36, a video effector 38, and a DAC (digital-to-analog converter) 40, while an analog voice output is ~~output~~ outputted to the speakers 15 through the voice decoder 34, a voice DAC 37, a voice effector 39, and a DAC 41.

[0042] Next, an operation procedure, from collection and editing of materials to reproduction of the collected and edited materials in the multimedia presentation system, will be explained.

(A) Collection and Editing of Material

[0043] The materials, i.e., an image, a voice, a character, and the like, to be subjected to or used in the multimedia presentation are collected or gathered by the PC 11. First, ~~the~~ a still image is captured by a digital camera or a scanner, and edited by photo-retouching software (e.g., "PhotoImpact" manufactured by Ulead Systems, Inc., etc.). Then, the

edited image data is subjected to JPEG (Joint Photographic Experts Group) compression, and filed.

[0044] ~~The~~ A motion image is captured by a video capture board ("Power Capture PCI" manufactured by Canopus Corp., etc.), and edited and filed by motion image editing software ("Media Studio" manufactured by Ulead Systems, Inc., etc.). ~~The~~ A voice is digitized by a sound board ("Soundblaster" manufactured by Creative Labs, Inc., etc.), and edited and filed by voice editing software ("CoolEdit 96" manufactured by Syntrillium Software Corp., etc.). ~~The~~ A character is generated, edited, and filed by a general editor.

[0045] Thus, completed multimedia materials are edited by the authoring tool dedicated to the multimedia presentation system. ~~Concretely~~ More specifically, the voice, the still image, the motion image, and the character are dragged and dropped (i.e., in a drag-and-drop operation), and pasted according to a time base. Then a scenario file, which is written ~~with~~ to include a sequence to reproduce the materials, is formed on the basis of information obtained by the pasting operation. An example of such ~~the~~ a scenario file is shown in Fig.3. Here, although a minimum-structure scenario is used for the explanation, an actual scenario ~~includes~~ file may include from tens of lines to hundreds of lines ~~from tens of lines~~.

[0046] If the PC 11 can perform reproduction simulation, the PC 11 performs it. Then, if a desired multimedia program sequence is achieved, the scenario file and the material files are transferred to the multimedia server 13 through the network 12 (e.g., Ethernet). In order to prevent an unnecessary transfer, if a similar program ~~has~~ already ~~existed~~ exists, a time stamp of each material file is measured, such that only ~~the~~ an updated file is transferred.

(B) Reproduction by Multimedia Server

[0047] The transferred multimedia program (i.e., scenario file and material files) is recorded ~~into~~ in the HDD 13a of the multimedia server 13, and then reproduced in response to an instruction from a not-shown terminal to be provided to a viewer.

[0048] Such a reproduction procedure will be explained below with reference to the scenario file shown in Fig. 3.

[0049] First, if the CPU 21 of the multimedia server 13 receives ~~the~~ a reproduction instruction, the CPU 21 reads a scenario file named "a.sen" from the HDD 13a and interprets it.

[0050] Then, the CPU 21 interprets an initial line "play a.snd" of this scenario file, reads an "a.snd" file from the HDD 13a, and starts transferring the read file to the voice decoder 34. Further, the CPU 21 interprets a next line "load ab.jpg", transfers an "ab.jpg" file to the image decoder 32, and compresses/decompresses the file ~~on~~ in the frame memory 35 to form ~~the~~ an image. At this time, it is assumed that the output from the frame memory 36 is displayed as the monitor output.

[0051] Subsequently, the CPU 21 interprets a next line "loadtext a.txt", overwrites the characters on the still image formed ~~on~~ in the frame memory 35. Finally, the CPU 21 interprets a next line "dis", and controls the video effector 38. Thus, as the CPU 21 uses a so-called "dissolve effect", it changes the image of the frame memory 36 currently displayed to the image of the frame memory 35 now formed.

[0052] In the multimedia presentation system according to the embodiment, the operation procedure from the collection and editing of the material files to the reproduction of ~~them~~ those files is performed according to the scenario file. The file update ~~of the file which features~~ feature of the present invention is performed according to the following procedure, as shown in the flow charts of Figs. 4 and 5. It is assumed that a program to realize the ~~procedure~~ procedures shown in these flow charts has been stored in, e.g., the HDD 13a of the multimedia server 13.

[0053] First, in ~~a~~ step S11, it is judged whether or not the PC 11 ~~transfers~~ is to transfer a new multimedia program. Namely, the PC 11 transfers, e.g., a new multimedia program

51, shown in Fig. 6, to the HDD 13a of the multimedia server 13, on the basis of a

protocol ftp, or the like.

[0054] In a next step S12, it is judged whether or not a directory named "PRESEN" of, which name is identical with that of the ~~transfer origin~~ directory to be transferred, exists in the HDD 13a of the multimedia server 13 ~~in~~ at the transfer destination. If it is judged that ~~the~~ a directory named "PRESEN" does not exist ~~in~~ at the transfer destination, the flow advances to ~~a~~ step S13 to form ~~the~~ a directory named "PRESEN" of, which name is identical with ~~that of the transfer origin~~ the directory to be transferred.

[0055] In ~~a~~ step S14, a scenario file named "a.SEN" and multimedia material files named "ab.jpg", "a.txt", and "a.snd", which are linked to and used by this scenario ~~and used~~ file, are recorded into the directory "PRESEN"~~m~~ which exists in the HDD 13a ~~and is identical~~ ~~with that of the transfer origin~~. At this time, if ~~the~~ a file of ~~the~~ an identical name already exists in the HDD 13a, the PC 11 measures a time stamp thereof. Then, if the measured time stamp of the file is new, the PC 11 overwrites ~~its~~ the contents to update this file. Conversely, if the measured time stamp is identical or old, the PC 11 does not do anything to the file. At this time, the contents of the HDD 13a are as shown in the program 51 of Fig. 6.

[0056] In ~~a~~ step S15, it is assumed that an English version of a presentation scenario ~~in~~ ~~English version~~ is necessary. In this case, a multimedia program 52 ~~of,~~ shown in Fig. 6, in which only a narration of ~~the~~ a previously transferred multimedia program 51 ~~of Fig. 6~~ has been changed to an English narration, is additionally transferred from the PC 11 to the HDD 13a of the multimedia server 13. At this time, ~~since~~ because the directory named "PRESEN" now exists in the HDD 13a, it is unnecessary to form such ~~the~~ a directory.

[0057] In ~~a~~ step S16, ~~among~~ of the material files ~~which~~ that together constitute the additional multimedia program, only ~~the~~ a file ~~which~~ that does not already exist in the directory named "PRESEN" and ~~the~~ an updated file are recorded into the HDD 13a. ~~Concretely, since~~ More specifically, because a scenario file named "b.SEN" does not

exist in the directory named "PRESEN", this file "b.SEN" is recorded in the directory named "PRESEN". Conversely, ~~since~~ because an image material file "ab.jpg" already exists in the directory named "PRESEN", this file "ab.jpg" is recorded only in a case where a time stamp of this file at the PC 11 side has been updated. Further, ~~since~~ because a voice material file "b.snd" and a character material file "b.txt" have been Anglicized and do not exist in the directory named "PRESEN", these files are recorded into the HDD 13a. Thus, the directory named "PRESEN" in the HDD 13a of the multimedia server 13 ~~is given as~~ is associated with a multimedia program 53, as shown in Fig. 6.

[0058] ~~Following steps~~ Steps S17 to S21 represent ~~the~~ a processing ~~which features~~ procedure of the embodiment.

[0059] ~~For example, since~~ If the English presentation becomes unnecessary (step S17 of Fig. 5), in ~~the~~ step S18 a list bLIST of ~~the materials~~ material files (including "b.SEN") used ~~in~~ by the scenario file named "b.SEN" is formed before the scenario file "b.SEN" is deleted. It is represented ~~that~~ by bLIST = {b.SEN, ab.jpg, b.snd, b.txt}.

[0060] In the next step S19, a list oLIST is formed of ~~the materials~~ material files used in all other ~~all~~ scenario files (only "a.SEN" in the embodiment) ~~at~~ in the same directory as that for the scenario file named "b.SEN" ~~is formed~~. It is represented ~~that~~ by oLIST = {a.SEN, ab.jpg, a.snd, a.txt}.

[0061] In ~~the~~ step S20, a list dLIST is formed of ~~the materials which~~ material files that exist in the list bLIST ~~and~~ but do not exist in the list oLIST ~~is formed~~ (program 54 of Fig. 6). It is represented ~~that~~ by dLIST = {b.SEN, b.snd, b.txt}.

[0062] In the final step S21, ~~the materials~~ material files of the list dLIST are deleted from the directory named "PRESEN" of the HDD 13a. Thus, as shown in a program 55 of Fig. 6, ~~since the~~ unnecessary files each having ~~the~~ a file name beginning ~~from~~ with "b" all are ~~all~~ deleted from the directory named "PRESEN", these files do not remain in the program 55.

[0063] As described above, according to the embodiment, if it is intended to delete the predetermined scenario file ("b.SEN" in the embodiment) recorded in the directory

named "PRESEN" of stored in the HDD 13a in of the multimedia server 13, the
unnecessary material files ("b.snd" and "b.txt" in the embodiment) stored in the directory
named "PRESEN" are automatically deleted. Namely, the a scenario file to be deleted
and the a scenario file to be remained remain are compared with each other, the material
files used in the scenario file to be remained remain are excluded from the material files
used in by the scenario file to be deleted, and then the scenario file to be deleted is
actually deleted. Thus, it is possible to easily and surely prevent that the unnecessary
material files are accumulated from accumulating in the HDD 13a.

[0064] In order to delete the unnecessary material files, the list of the material files used
in by the scenario file to be deleted and the list of the material files used in by the
scenario file to be remained remain stored in the storage means are compared with each
other to detect the unnecessary material files. Therefore, even if the a material file itself
does not include information representing a relation between this material file and the a
scenario file, it is possible to delete the unnecessary material files.

[0065] In the embodiment, the scenario file executed by a presentation program and the
file update procedure for the updating a material file used in by this scenario file have
been explained. Of course, the present invention is not limited to this. For example, it is
apparent that the present invention is applicable to a case where in which a certain main
file executed by a certain application program and a sub file related to this main file are
deleted. Namely, the present invention can be preferably used in a case where in which
the sub file, such as a mere voice file, a mere JPEG file, or the like, related to the main
file does not include any link information.

[0066] It has been explained that the computer program to realize for realizing the
procedure of the file update method which features of the present invention has been
stored in the HDD 13a of the multimedia server 13. However, it is possible to store such
the a computer program into a storage device of the PC 11, such that the PC 11 executes
such the an operation such as forming each list.

[0067] Further, in the above-described explanation of the embodiment, ~~the~~ processing in ~~the~~ an identical directory has been assumed. However, such ~~the~~ an explanation is also applicable to a case ~~where~~ in which the processing spreads over a directory hierarchy. For example, it is assumed that the scenario file has ~~the~~ material files in its own sub-directory. In this case, if ~~the~~ a specific scenario file is to be deleted, in ~~the~~ step S19, all the scenario files existing in its own upper directories are searched for ~~until~~ up to the root directory, and ~~the~~ material files used in these scenario files are all registered ~~into~~ in the list oLIST together with a directory path list of full ~~path~~ paths.

[0068] Further, although the Ethernet is used as the network in the embodiment, a WAN (wide area network), such as an ISDN (integrated services digital network), or the like, a cable modem, a satellite line, or the like ~~can,~~ may be similarly used as the network. Further, although the hard disk is used as ~~the~~ recording means, an MO (magnetooptical disk), a CD-RW (compact disk rewritable), a DVD-RAM (digital versatile disk random access memory), an FDD (floppy disk drive), or the like, can be similarly used as the recording means.

[0069] It is needless to say that the present invention is not limited to the apparatus in the above-described embodiment, but may be applied to a system composed of plural pieces of equipments or an apparatus composed of one piece of equipment. It is also needless to say that the object of the present invention can be achieved even in a case where a storage medium storing program codes of a software program for realizing the ~~function~~ functions of the above-described embodiment is supplied to a system or an apparatus, and then a computer (or CPU or MPU) in the system or the apparatus reads and executes the program codes stored in the ~~memory~~ storage medium.

[0070] In this case, the program codes themselves read from the storage medium realize the ~~function~~ functions of the embodiment, and the storage medium storing such ~~the~~ program codes constitute the present invention. The storage medium storing the program codes can be, e.g., a floppy disk, a hard disk, an optical disk, a magnetooptical disk, a CD-ROM, a CD-R, a magnetic tape, a non-volatile memory card, a ROM, or the like.

Further, it is needless to say that the present invention also includes not only the case where the function in which the functions of the embodiment is are realized by the execution of the program codes read by the computer, but also a case where in which an OS, or the like, running on the computer executes all the processing or a part thereof according to the instructions of the program codes, thereby realizing the function functions of the embodiment.

[0071] Further, it is needless to say that the present invention further includes a case where in which the program codes read from the storage medium are once stored in a memory provided in a function expansion board inserted in the computer or a function expansion unit connected to the computer, and a CPU, or the like, provided in the function expansion board or the function expansion unit executes all the processing or a part thereof according to the instructions of such program codes, thereby realizing the functions of the embodiments.

[0072] According to the above-described embodiment, it is possible to easily prevent that the unnecessary files are accumulated from accumulating, and to delete the a sub file which that is not related to any main file. Therefore, it is possible to prevent that redundant data is accumulated from accumulating in a storage medium and that a necessary sub file is from being erroneously deleted.

[0073] Further, even if the an image file or the a voice file used as the a sub-file itself is not recorded with the information representing the its relation to the a main file, it is possible to delete the unnecessary sub-file if it is unnecessary.

[0074] Further, if the present invention is applied to a presentation program or system which that frequently uses the a file of a JPEG image or voice, which itself does not include any information representing the its relation to other files, the a derived effect is large.

[0075] Although the present invention has been explained with the preferred embodiment embodiments, the present invention is not limited to the structure of such the embodiment embodiments. That is, various modifications and changes to those

<u>embodiments</u> are possible ~~in the present invention~~ without departing from the spirit and scope of the attached claims.

ABSTRACT OF THE DISCLOSURE

[0076] In a system for recording scenario and material files into a storage unit and reproducing the material files based on the scenario file, an information processing method ~~capable of~~ easily and surely ~~preventing that the~~ <u>prevents</u> unnecessary material files ~~are accumulated~~ <u>from accumulating</u> in the storage unit ~~is provided. When the~~ <u>by,</u> <u>when a</u> scenario file recorded in a hard disk is deleted, ~~the~~ unnecessary material files in this hard disk are automatically deleted. Namely, in the hard disk, the scenario file to be deleted and ~~the~~ <u>a</u> scenario file to ~~be remained~~ <u>remain</u> are compared with each other, and the material files ~~which~~ <u>that</u> are used ~~in~~ <u>by</u> the scenario file to be deleted and ~~from which~~ ~~the material files used in~~ <u>not used by</u> the remaining scenario file are ~~excluded are~~ deleted.

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